

WHAT IS CLAIMED IS:

1. A method of detecting a malfunction in an electric injection-molding machine, the method being applied to the step of ejecting a molded product by pushing an ejector pin out of a die, comprising:

obtaining a pattern showing torque of an ejector-pin driving motor versus time or a position of an ejector pin when a molded product is normally removed:

setting in advance at least one monitoring zone based on the pattern and the upper and lower limits of torque in each of the monitoring zones; and

monitoring a torque value in each of the monitoring zones during the ejecting step, judging that a malfunction occurs when the torque value falls outside the upper and lower limits of the monitoring zone, and raising an alarm.

2. A method of detecting a malfunction in an electric injection-molding machine, the method being applied to the step of ejecting a molded product by pushing an ejector pin out of a die, comprising:

obtaining a pattern showing torque of an ejector-pin driving motor versus time or a position of an ejector pin when a molded product is normally removed:

setting in advance at least one monitoring zone based on the pattern and the upper and lower limits of torque in each of the monitoring zones;

monitoring a torque value in each of the

monitoring zones during the ejecting step, judging that a malfunction occurs when the torque value falls outside the upper and lower limits of the monitoring zone, and counting the number of malfunctions; and

5           raising an alarm when the number of malfunctions in a single ejection step reaches a predetermined number.

3. A method of detecting a malfunction in an electric injection-molding machine, the method being applied to the step of ejecting a molded product by pushing an ejector pin out of a die, comprising:

obtaining a pattern showing torque of an ejector-pin driving motor versus time or a position of an ejector pin when a molded product is normally removed:

15           setting in advance at least one monitoring zone based on the pattern and the upper and lower limits of torque in each of the monitoring zones;

monitoring a torque value in each of the monitoring zones during the ejecting step, judging that a malfunction occurs when the torque value the upper and lower limits of the monitoring zone, and counting the number of malfunctions; and

20           raising an alarm when the number of malfunctions occurring within a predetermined time reaches a predetermined number.

4. A method of detecting a malfunction in a hydraulic injection-molding machine, the method being

applied to the step of ejecting a molded product by pushing an ejector pin out of a die, comprising:

obtaining a pattern showing hydraulic pressure of an ejector-pin driving hydraulic pump versus time or a position of an ejector pin when a molded product is normally removed:

setting in advance at least one monitoring zone based on the pattern and the upper and lower limits of hydraulic pressure in each of the monitoring zones; and monitoring a hydraulic pressure value in each of the monitoring zones during the ejecting step, judging that a malfunction occurs when the hydraulic pressure value falls outside the upper and lower limits, and raising an alarm.

5. A method of detecting a malfunction in an hydraulic injection-molding machine, the method being applied to the step of ejecting a molded product by pushing an ejector pin out of a die, comprising:

obtaining a pattern showing hydraulic pressure of an ejector-pin driving hydraulic pump versus time or a position of an ejector pin when a molded product is normally removed:

setting in advance at least one monitoring zone based on the pattern and the upper and lower limits of hydraulic pressure in each of the monitoring zones;

monitoring a hydraulic pressure value in each of the monitoring zones during the ejecting step, judging

that a malfunction occurs when the hydraulic pressure value falls outside the upper and lower limits, and counting the number of malfunctions; and

5       raising an alarm when the number of malfunctions in a single ejection step reaches a predetermined number.

6. A method of detecting a malfunction in a hydraulic injection-molding machine, the method being applied to the step of ejecting a molded product by pushing an ejector pin out of a die, comprising:

10       obtaining a pattern showing hydraulic pressure of an ejector-pin driving hydraulic bump time or a position of an ejector pin when a molded product is normally removed:

15       setting in advance at least one monitoring zone based on the pattern and the upper and lower limits of hydraulic pressure in each of the monitoring zones; and

20       monitoring a hydraulic pressure value in each of the monitoring zones during the ejecting step, judging that a malfunction occurs when the hydraulic pressure value falls outside the upper and lower limits of the monitoring zone, and counting the number of malfunctions; and

25       raising an alarm when the number of malfunctions occurring within a predetermined time reaches a predetermined number.